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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application]This invention protects electronic parts from contamination, on the occasion of storage of electronic parts, transportation, and wearing, since it mounts in an electronic circuit board, it is aligned, and it relates to the cover tape by which a heat seal may be carried out to the carrier tape made from a plastic which formed the receiving pocket among the packed bodies which have a function which can be taken out.

[0002]

[Description of the Prior Art]Electronic parts for surface mounts, such as transistors including IC, a diode, a capacitor, and a piezoelectric element register, in recent years, According to the shape of electronic parts, it is packed by the packed body which consists of a cover tape which can carry out the heat seal of the pocket which can be stored, and by which embossing shaping was carried out to the carrier tape made from a plastic formed continuously, and a carrier tape, and it is supplied. After the electronic parts of contents exfoliate the cover tape of a packed body, they are taken out automatically and the surface mount is carried out to the electronic circuit board. Although the intensity at the time of a cover tape exfoliating from a carrier tape was called peel-off intensity, when this intensity was too low, at the time of a packed body transfer, the cover tape separated and there was a problem that the electronic parts which are contents were omitted. On the contrary, when too strong, the phenomenon which jumps out of a receiving pocket just before a carrier tape vibrates and being equipped with electronic parts, when exfoliating a cover tape, i.e., a jumping trouble, was caused.

[0003]A mechanism is classified into three, an interfacial-peeling type, a transfer exfoliation type, and a cohesive failure type, when exfoliating from the carrier tape of the cover tape currently marketed now. An interfacial-peeling type is that in which the sealing surface of a cover tape and a carrier tape exfoliates, At the time of exfoliation, the glue line itself is

transferred by the carrier tape and a transfer exfoliation type is a thing of a type which exfoliates when another layer or the glue line (it is henceforth called the sealant) itself from which a glue line differs in a cohesive failure type is torn. When only the state at the time of merits-and-demerits **** exfoliating the cover tape by which the seal was carried out to the carrier tape by each type is compared, since a sealing surface and the surface of separation are the same, it is easy to be influenced by the shape of a carrier tape, construction material, and description, peel-off intensity becomes unstable, and an interfacial-peeling type is cheap. On a mechanism, a glue line needs to be a thin film, what is called lacquer for heat sealing must be used, peel-off intensity tends to become sensitive to seal temperature, and a transfer exfoliation type has it in suitable peel-off intensity. [difficult to get] Since a cohesive failure type differs in a glue line and stratum disjunctum, there is little seal contingency of peel-off intensity.

[0004] It has the big strong point in which it is not influenced by the shape of a carrier tape, construction material, and description. However, since the layer other than a glue line is involving at the time of exfoliation, layers other than sealant may exfoliate. It is hard to set up the position which sealant destroys, a sealant layer remains on the surface of a carrier tape at the time of exfoliation, and it will be in the state (it is henceforth called DERAMI) where it becomes impossible to take out contents. the tear of sealant itself -- since it is designed at a low price, it is a mixture of two or more resin which cannot be mixed easily in many cases, and it may not be mixed uniformly, and this thing may worsen the transparency of a cover tape, or they may make the fault by an aggregate. In the case of such a use, the heat-resistant inferior thing may be contained among resin in a mixture. There is a case where these aggregates or a degradation thing appears and productivity is dropped, plentifully at the time of sealant film production for these reasons. . For example, are shown in claim 5 of the Japanese patent No. (applicant YUSEBE SOSHIETE ANONIMU) 1347759. if formation of sealant is tried using combination of the block copolymer of polyethylene, polystyrene, elastomer-like styrene butadiene styrene, or styrene isoprene styrene and working temperature will exceed 200 ** -- butadiene -- or, An isoprene ingredient causes a polymerization reaction, and makes an aggregate, and the production yield gets remarkably bad.

[0005]

[Problem(s) to be Solved by the Invention] That this invention should solve the above problems The seal temperature dependence of peel-off intensity, The result which aging is small, was going to obtain the sealing nature stable cover tape, and was studied wholeheartedly, The biaxially oriented film which is polyester, polypropylene, or nylon as an outer layer, Use polyethylene as an outer layer and an interlayer between sealant, and sealant Polyethylene, It is a mixture of polystyrene or polyethylene, polystyrene, and hydrogenation styrene butadiene styrene block copolymer, Knowledge that it can become a cover tape which the film which

performs corona discharge treatment is transparent on the sealant surface, and has the good characteristic in it is acquired, and it comes to complete this invention.

[0006]

[Means for Solving the Problem] This invention is a pocket which stores electronic parts a cover tape which can carry out a heat seal to a carrier tape made from a plastic formed continuously, and this cover tape, An outer layer is a biaxially oriented film which is polyester, polypropylene, or nylon, and an outer layer and an interlayer between sealant are polyethylene, and sealant, It is a mixture of polyethylene, polystyrene or polyethylene, polystyrene, and hydrogenation styrene butadiene styrene block copolymer, and is a cover tape for an electronic-parts package which performs corona discharge treatment to the sealant surface, and is characterized by things. Thickness of a biaxially oriented film whose desirable mode of this invention is an outer layer is 5-30micro, As opposed to polyethylene 100 weight section whose melt flow rates thickness of an interlayer's polyethylene film is 5-50micro, thickness of sealant is 5-20micro, and sealant is 10-30g/10 minutes, or [that a melt flow rate is a mixture which consists of five to polystyrene 100 weight section which are 10-30g/10 minutes] -- or, As opposed to polyethylene 100 weight section whose melt flow rates are 10-30g/10 minutes, Five to polystyrene 100 weight section whose melt flow rates are 10-30g/10 minutes, And a melt flow rate is a mixture which consists of one to hydrogenation styrene butadiene styrene block copolymer 50 weight section which are 30-250g/10 minutes, Surface tension on the surface of sealant performs corona discharge treatment set to cm in 35-50 dynes /. Adhesive strength of sealant of this cover tape and a sealing surface of this carrier tape is 10 per seal width of 1 mm - 120gr, and visible light transmissivity of this cover tape is a cover tape for an electronic-parts package characterized by being not less than 80% preferably not less than 75%.

[0007]

[Function] When drawing 1 explains the component of the cover tape 1 of this invention, the outer layer 2 is a biaxially oriented film which is polyester, polypropylene, or nylon, and it is a rigid high film in the transparence whose thickness is 5-30micro. The thickness of rigidity is lost at 5micro or less, and a cover tape goes out easily. If 30 micro is exceeded, a seal will become it is too hard and unstable. Density comprises low density polyethylene of $0.91-0.92\text{g}/\text{cm}^2$, and the interlayer 4 is a film whose thickness is 5-50micro and which is transparent and is supple. When thickness carries out a seal to a carrier tape in 5micro or less, since there is little elasticity of a cover tape, it is influenced by the shape of a carrier tape, and peel-off intensity becomes unstable. After film production, it is easy to be cooled and adhesion with sealant worsens. If 50 micro is exceeded, heat will become difficult to be transmitted to sealant and required peel-off intensity will no longer be obtained. Both may be laminated via the heat-hardened type glue line of an isocyanate system, an imine system, etc. for the purpose of

raising the laminate strength of an outer layer and an interlayer.

[0008]As opposed to polyethylene 100 weight section whose melt flow rates of the sealant 5 are 10-30g/10 minutes, or [that polystyrene whose melt flow rates are 10-30g/10 minutes is a mixture which is five to 100 weight section] -- or, As opposed to polyethylene 100 weight section whose melt flow rates are 10-30g/10 minutes, Polystyrene whose melt flow rates are 10-30g/10 minutes Five to 100 weight section, The hydrogenation styrene butadiene styrene block copolymer whose melt flow rates are 30-250g/10 minutes is a mixture which is one to 50 weight section, and it is a film of the transparency which performs corona discharge treatment from which the surface tension on the surface of sealant is set to cm in 35-50 dynes /. About the formation method of the above multilayer film, extrusion laminating method is cheap, and it sees from a sanitary aspect and is the most desirable. the melt flow rate of polyethylene -- 10g/10 minutes or less -- or, the melt flow rate of polystyrene -- 10g/10 minutes or less -- or, When the melt flow rates of hydrogenation styrene butadiene styrene block copolymer (SEBS) are 30g/10 minutes or less, if extrusion laminating method is used as a processing method, film production with it cannot be performed. [the small spread nature of a film and] [suitable] the melt flow rate of polyethylene -- 30g/10 minutes or more -- or, When the melt flow rate of polystyrene is [the melt flow rates of 30g/10 minutes or more, or hydrogenation styrene butadiene styrene block copolymer] 250g/10 minutes or more, film production with necking appropriate intense too cannot be performed. The cohesive failure of sealant does not break out that the content of polystyrene is five or less weight sections to polyethylene 100 weight section. Mixture worsens that they are 100 or more weight sections, and it becomes impossible to produce a film. The visible light transmissivity of a film will be 80% or less for the content of hydrogenation styrene butadiene styrene block copolymer (SEBS) to be one or less weight section to polyethylene 100 weight section. The thickness scattering of a film arises that they are 50 or more weight sections in the case of an extrusion lamination. If the thickness of sealant shall be 5micro or less with extrusion laminating method, the variation in thickness will be large and suitable peel-off intensity will no longer be obtained at the time of a seal. In not less than 20micro, DERAMI occurs easily at the time of a peel. Adhesive strength with a carrier tape becomes that the surface tension on the surface of sealant is 35 or less dyne/cm with 20g or less, and it is not suitable practically. Blocking arises that they are 50 or more dyne/cm at the time of cover tape storage, and ***** becomes impossible.

[0009]In order to establish an electrostatic effect, an antistatic treatment layer or a conductive layer may be provided in an outer layer side, i.e., the surface and rear surface of a biaxially oriented polyester film. In this case, resin of sealant is formed so that the adhesive strength of this cover tape 1 and this carrier tape 6 may become ten to 70 gr still more preferably ten to 120 gr per seal width of 1 mm. When peel-off intensity is lower than 10gr, at the time of a packed body transfer, a cover tape separates and there is a problem that the electronic parts

which are contents are omitted. On the contrary, if higher than 120gr, the phenomenon which a carrier tape vibrates when exfoliating a cover tape, and jumps out of a receiving pocket just before electronic-parts wearing is carried out, i.e., a jumping trouble, will be caused. According to this invention, the dependency of seal conditions is low, and the performance which aging of the peel-off intensity by storage environment makes few purposes can be obtained. Since it is constituted so that the visible light transmissivity of a cover tape may be not less than 80% preferably not less than 75%, the electronic parts of the inside enclosed with the carrier tape can check with viewing or machinery. When lower than 10%, the check of inner electronic parts is difficult.

[0010]

[Example]Although the example of this invention is shown below, this invention is not limited at all by these examples.

<<Examples 1-6>>, the <<comparative examples 1-6>>

The cover tape of the lamination shown in drawing 1 which produced the sealant of the combination formula shown in Table 1 and 2 by the extrusion lamination at the biaxially oriented polyester film and polyethylene [of 15 micro of thickness / of the laminated article of polyethylene] side of 25 micro of thickness to 10 micro of thickness was obtained. The obtained cover tape was heat sealed with the carrier tape made from PET of 8-mm width after the slit to 5.3-mm width, peel-off intensity and a peeling mechanism were measured on condition of the following, and visible light transmissivity was measured further. The characterization result was shown in Table 1 and 2.

* Heat-sealing conditions : $160^{\circ}\text{C}/1\text{kg}/\text{cm}^2/0.1\text{sec.}$, seal width 0.4mmx2 Peel conditions : A 180-degree peel, peel speed 300 mm/min. n=3 Peeling mechanism : Condensation; exfoliation by cohesive failure, exfoliation by an interface; interface[0011]

Table One fruit ** Example 1 2 3 4 5 6 sealant Combination (weight section)

Polyethylene 100 100 100 100. 100 100 Polystyrene 10 30. 90 30 30 30 SEBS 0 0. 0 7 45 7
surface tension (dyne/cm) -- 40 40 40 40 40 The characteristic of 45 cover tapes Visible light
transmissivity (%) 82 80 7887 90 87 peel-off intensity 48 51 62 45 30 54 (initial value g/1mm
width)

Peeling mechanism Condensation Condensation Condensation Condensation Condensation
Condensation[0012]

Table 2 ratios ** Example 1 2 3 4 5 6 sealant Combination (weight section)

Polyethylene 100 100 100 100. 100 100 Polystyrene 4 110. 30 30 4 110 SEBS 0 0. 70 7 7 7
surface tension (dyne/cm) -- 40 40 40 30 40 Characteristic visible light transmissivity (%) of 30
cover tapes 84 68 91 87 84 72 peel-off intensity 10 72 12 0 8 67 (initial value g/1mm width)

Peeling mechanism Interface Condensation Interface - Interface Condensation[0013]

[Effect of the Invention]The point that the cover tape of this invention can set up peel-off

intensity with a carrier tape arbitrarily in the range of 10 per mm - 120gr, The problem that the dependency over the seal conditions of the peel-off intensity which is the conventional problem is large, the problem which changes with storage environment temporally, a DERAMI problem, an aggregate problem, and a transparency problem can be solved, and the stable peel-off intensity can be obtained.

[Translation done.]